

**IN THE UNITED STATES DISTRICT COURT  
FOR THE WESTERN DISTRICT OF TEXAS  
WACO DIVISION**

PARKERVISION, INC.,

Plaintiff,

v.

MEDIATEK INC. and  
 MEDIATEK USA INC.,

Defendants.

Case No. 6:22-cv-01163-ADA

**JURY TRIAL DEMANDED**

**PUBLIC VERSION**

**OPENING CLAIM CONSTRUCTION BRIEF  
BY DEFENDANTS MEDIATEK INC. AND MEDIATEK USA INC.**

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## I. INTRODUCTION

**Eighty-two.** ParkerVision is asserting 82 claims against MediaTek across four patents in this case. Objectively, such a large number of asserted claims is an abuse of this Court’s procedures for handling patent cases. Additionally, three of these patents expired in 2018, and the fourth (the ’835 patent) was recently gutted by the PTAB in an IPR, although ParkerVision continues to assert the invalid claims here.

ParkerVision is using the large number of asserted claims of expired patents, as well as a second lawsuit it filed against MediaTek on three additional expired patents (Case No. 6:23-cv-00375) and a third lawsuit filed a day before this brief was due (Case No. 6:23-cv-00732) on three further patents, two of which are also expired, in an attempt to strong arm MediaTek into paying millions for an outdated technology it does not use. Perhaps this is because ParkerVision finds itself in nearly 50 million dollars of debt due to a decade of failed litigation, of which at least 40 million is owed to litigation funders. *See, e.g.*, ParkerVision Inc., 10-K (FY 2022) (Mar. 28, 2023) at 17 (“The contingent payment obligation to Brickell is recorded at its estimated fair market value of \$40.7 million . . .”), 25 (Total liability equal to \$52.440 million), available at [https://www.sec.gov/ix?doc=/Archives/edgar/data/914139/000143774923008226/prkr20221231\\_10k.htm](https://www.sec.gov/ix?doc=/Archives/edgar/data/914139/000143774923008226/prkr20221231_10k.htm) (last visited October 27, 2023).

Currently pending is the claim construction of asserted U.S. Patent Nos. 6,049,706; 6,266,518; 7,282,835; and 8,660,513. The parties have raised disputes concerning nineteen terms from across the four asserted patents. MediaTek requests that the Court apply established rules of claim construction and adopt its proposed constructions. MediaTek recognizes that for some of these terms, one or more courts, including this Court, have adopted constructions different than that proposed by MediaTek. MediaTek, however, was not a party to those proceedings, and thus respectfully requests full consideration of its positions as to the previously

construed terms.

## II. TECHNOLOGICAL BACKGROUND

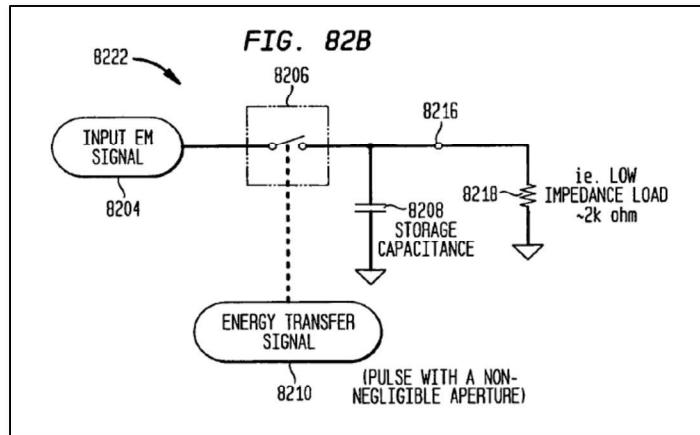
The asserted ***82 patent claims*** generally concern methods and systems for down-converting a modulated carrier signal to a lower frequency signal, including a baseband signal. (E.g., '706 patent (Ex. 1)<sup>1</sup> at 3:30–31 (“Briefly stated, the invention operates to filter an input signal, and to down-convert the filtered input signal. According to embodiments of the present invention, the filtering operation and the down-conversion operation are performed in an integrated, unified manner.”); '518 patent (Ex. 2) at Abstract (“Methods, systems, and apparatuses for down-converting an electromagnetic (EM) signal by aliasing the EM signal are described herein.”); '835 patent (Ex. 3) at 1:51–54 (“The present invention is generally related to frequency translation, and applications of same, and more particularly to wireless and wired applications of cable modems using universal frequency translation technology.”); '513 patent (Ex. 4) at Abstract (“Methods, systems, and apparatuses, and combinations and sub-combinations thereof, for down-converting an electromagnetic (EM) signal are described herein.”).)

ParkerVision’s patents describe down-conversion of a carrier signal by “sampling” the signal using a “switch” according to a control signal that is less than twice the frequency of the carrier signal and that has “apertures” that are “non-negligible” and “tend away from zero time in duration.” (E.g., '706 patent at 32:4–18; '518 patent at 65:57–66:10; '835 patent at 10:31–45; '513 patent at 72:36–56.) In many embodiments, the switch is followed by a capacitor—the switch “samples” an input electromagnetic signal, the sample flows to the capacitor, and then the sample is discharged from the capacitor to a load “to form” the down-converted signal. (E.g.,

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<sup>1</sup> All exhibits cited herein are exhibits to the Declaration of Kevin A. Zeck filed in support of MediaTek’s Opening Claim Construction Brief.

'513 patent at Figs. 82A, 82B, 72:57–74:13; *see also id.* at Abstract (“The invention accumulates the results of the recursive operations and uses the accumulated results to form a down-converted signal.”).) Figure 82B of the '513 patent demonstrates an exemplary arrangement.



Notably, ParkerVision concedes that at the time of the alleged invention, a switch or mixer followed by a capacitor was not unique. Rather, it was a well-known circuit arrangement for down-converting signals. (*E.g.*, Ex. 5 at 122:24–123:1, 125:15–17, 154:19–22, 164:4–8 (Excerpts of Trial Tr. (Oct. 8, 2013), *ParkerVision Inc. v. Qualcomm Inc.*, No. 3:11-cv-00719 (M.D. Fla.)).) ParkerVision has therefore repeatedly contended that its invention—“energy transfer (energy sampling)”—is different from three prior art systems having the same basic circuit arrangement: (i) “sample and hold” systems that use a switch under the control of a sampling signal with a “negligible” aperture to sample the voltage of the carrier signal at an aliasing rate, followed by a capacitor to hold the sampled voltage level; (ii) “track and hold” systems that use a switch under the control of a sampling signal to track the input signal for some duration, and then hold the final value for the rest of the period; and (iii) “mixing” systems that down-convert a carrier signal by multiplying it with a local oscillator signal.

For example, in IPR2021-00985 (concerning the '835 patent), ParkerVision emphasized: “Energy transfer (energy sampling) was/is a *fundamentally different and competing* method to

voltage sampling. ... ParkerVision's energy transfer system includes a switch [], a *storage* element (capacitor []), and a *low* impedance load (yellow)." (Ex. 6 at 20 (Patent Owner Resp., IPR2021-00985, Paper 17 (Feb. 18, 2022) (emphasis in original).) And in IPR2020-01302 (concerning U.S. Patent 7,539,474, which incorporates by reference applications related to the asserted patents), ParkerVision exhorted: "The difference between energy transfer/sampling and mixing systems is significant. Indeed, energy transfer/sampling and mixing systems are *fundamentally different and competing* technologies." (Ex. 7 at 2–3 (Patent Owner Resp., IPR2021-01302, Paper 16 (May 18, 2021) (emphasis in original).)

In summary, ParkerVision's alleged technological contribution is, based on its own statements, minimal.

### **III. PRIOR PARKERVISION PROCEEDINGS**

ParkerVision has asserted the '706, '518, '835, and '513 patents in several previous litigations. Those litigations have resulted in the following claim construction opinions:

- Order on Claim Construction, *ParkerVision, Inc. v. Intel Corp.*, No. 6:20-cv-00108, ECF No. 75 (W.D. Tex. Jan. 28, 2021) (Ex. 8);
- Amended Claim Construction Order, *ParkerVision, Inc. v. Intel Corp.*, No. 6:20-cv-00562, ECF No. 66 (W.D. Tex. Oct. 22, 2021) (Ex. 9);
- Claim Construction Order and Memorandum in Support Thereof, *ParkerVision, Inc. v. LG Electronics, Inc.*, No. 6:21-cv-00520-ADA, ECF No. 55 (W.D. Tex. June 21, 2022) (Magistrate Judge Gilliland) (Ex. 10); and
- Special Master's Report and Recommendation Regarding Claim Construction, *ParkerVision, Inc. v. Hisense Co., Ltd.*, No. 6:20-cv-00870-ADA, ECF No. 72 (W.D. Tex. Aug. 29, 2022) (Ex. 11).

ParkerVision also asserted the '518 patent against Qualcomm in 2011, and this patent was at issue in *ParkerVision, Inc. v. Qualcomm Inc.*, 621 F. App'x 1009 (Fed. Cir. 2015), where the Federal Circuit affirmed the district court's determination that claims 82 and 90–91 were anticipated by a prior art reference (Weisskopf). *Id.* at 1022. Its validity was also challenged in

IPR2014-00946, which resulted in ParkerVision disclaiming claims 1 (astoundingly asserted against MediaTek by ParkerVision in this case), 82, and 90–91. ('518 patent at *Inter Partes Review Certificate*.)

Additionally, the PTAB has invalidated several claims of the asserted '835 patent in IPR2021-00985. In that IPR, the Patent Office determined that claims 1, 12–15, and 17–20 are unpatentable. (Ex. 12 (Final Written Decision, IPR2021-00985, Paper No. 44 (PTAB Nov. 17, 2022)).) ParkerVision appealed the PTAB's decision to the Federal Circuit (Appeal No. 23-1417). The appeal is currently pending, with all briefing submitted. A date for oral argument has not yet been set.

#### **IV. TERMS PREVIOUSLY CONSTRUED**

##### **A. “storage [module / device / element]”**

<b>Claim Term</b>	<b>MediaTek’s Proposed Construction</b>	<b>ParkerVision’s Proposed Construction</b>
“storage [module / element / device]” '835 patent, claims 1, 18; '835 patent, claims 3, 4, 20; '513 patent, claim 19; '518 patent, claim 16	“a [device / module / element] that stores non-negligible amounts of energy from an input electromagnetic signal”	<b>Energy storage element / storage element:</b> “an element of an energy transfer system that stores non-negligible amounts of energy from an input electromagnetic signal” <b>Storage device:</b> “a device of an energy transfer system that stores non-negligible amounts of energy from an input electromagnetic signal” <b>Storage module:</b> “a module of an energy transfer system that stores non-negligible amounts of energy from an input electromagnetic signal”

The sole dispute between the parties is whether “of an energy transfer system” is appropriately included in the construction of “storage [module / element / device].” While this

Court previously construed these terms to include “of an energy transfer system,” it did not have the benefit of the PTAB’s final written decision in IPR2020-01265 (concerning U.S. Patent No. 7,110,444) and in IPR2021-00985 (concerning the ’835 patent). In those IPRs, the PTAB construed “storage module” as “a module of a system that stores non-negligible amounts of energy from an input EM [electromagnetic] signal.” (Ex. 12 at 21; Ex. 13 at 41 (Final Written Decision, IPR2020-01265, Paper No. 44 (PTAB Jan. 21, 2022))).

Judge Gilliland and Special Master Dr. Joshua Yi, like this Court, previously issued constructions for “storage [module / device / element]” that included “of an energy transfer system.”<sup>2</sup> Although the PTAB’s decision in IPR2020-01265 had issued by the time of the Magistrate’s and Special Master’s reports and recommendations, the PTAB’s decision in IPR2021-00985 had not.

In IPR2021-00985, the PTAB re-affirmed its construction of “storage element,” which omitted “of an energy transfer system.” The PTAB did so principally because the ’551 patent, to which the ’518, ’835, and ’513 patents claim priority, expressly defines “storage modules” as “systems that store non-negligible amounts of energy from an input EM signal.” (Ex. 12 at 15, 17 (quoting ’551 patent at 66:59–67).) The PTAB also noted that in IPR2014-00948, ParkerVision sought to construe “storage module” the same way, and specifically contended that the written description expressly defined “storage module.” (Ex. 12 at 18 (citing Ex. 14 (Patent Owner Preliminary Response, IPR2014-00948, Paper No. 7 (Sept. 24, 2014)); Ex. 14 at 21 (ParkerVision: “The incorporated ’551 Specification explicitly defines a storage module and

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<sup>2</sup> Special Master Yi deferred to Judge Gilliland’s analysis regarding these terms. (Ex. 11 at 31 (“For brevity, the undersigned incorporates [] Judge Gilliland’s analysis with respect to this term.”).) Special Master Yi, however, rejected ParkerVision’s attempt to further engraft “for driving a low impedance load” onto these terms, even though ParkerVision contends this is a key feature “of an energy transfer system.” (*Id.* at 28–29, 32–33.)

draws the distinction between storage modules and holding modules[.]”)).

The PTAB also recognized that Judge Gilliland and Special Master Yi had disagreed agreed with it about the construction of “storage module,” but the PTAB maintained its construction was correct for at least the following reasons. First, the PTAB determined that under *Thorner v. Sony Computer Ent. Am. LLC*, 669 F.3d 1362, 1366 (Fed. Cir. 2012) (citations omitted), ParkerVision had “clearly set forth a definition [of storage module] that is different than the plain and ordinary meaning and, in so doing, clearly expressed an intent to redefine the term.” (Ex. 12 at 19 (“That the patentees intended to redefine the term ‘storage module’ is clearly expressed by the use of ‘as used herein’ and ‘refers to’ in the above passage . . . ”).) Second, the PTAB rejected ParkerVision’s contention that “refers to” was not definitional in view of ParkerVision’s inconsistent argument that the same phrase as to another term *was* definitional. (*Id.* at 19–20 (discussing “cable modem”); *see also id.* at 21 (rejecting ParkerVision’s contention that the passage from the ’551 patent is comparative and not definitional: “We agree that it is comparative, but it is *also definitional*.”) (emphasis in original))). Third and finally, ParkerVision had “absolutely no (even remotely) colorable explanation as to why it repeatedly argued in, IPR2014-00948, that the’551 patent ‘*provides an explicit definition*’ and ‘*explicitly defines a storage module*.’” (*Id.* at 20 (emphasis in original).)

To the extent that ParkerVision argues here (as it has elsewhere) that IPR2014-00948 was conducted under the broadest reasonable claim interpretation standard and is therefore irrelevant, this argument is a red-herring. It is black letter law that statements made by a patentee in IPR proceedings, including under the broadest reasonable interpretation claim construction standard can result in prosecution disclaimer. *See Aylus Networks, Inc. v. Apple Inc.*, 856 F.3d 1353, 1361–1362 (Fed. Cir. 2017). ParkerVision should not be rewarded with its shifting sands

approach to claim construction and should be held to its explicit statements, both in the patents' written descriptions and in IPR2014-00948.

For these reasons, the “of an energy transfer system” language should not be included in the construction of “storage [module / element / device].”<sup>3</sup>

#### B. “switch”

Claim Term	MediaTek's Proposed Construction	ParkerVision's Proposed Construction
“switch” ’706 patent, claims 86, 87, 88, 91, 93; ’835 patent, claims 18, 19, 20; ’513 patent, claim 19	“an electronic device for opening and closing a circuit”	Plain-and-ordinary meaning wherein the plain-and-ordinary meaning is: “an electronic device for opening and closing a circuit as dictated by an independent control input”

The parties dispute whether “as dictated by an independent control input” is properly included in the construction of “switch.” While the term “switch” has a well-known meaning to a person of ordinary skill in the art (that does not include this extra language), MediaTek recognizes that this language has been adopted in four instances, including by this Court. But the specifications of the ’706, ’835, and ’513 patents demonstrate that this ambiguous language should be omitted.

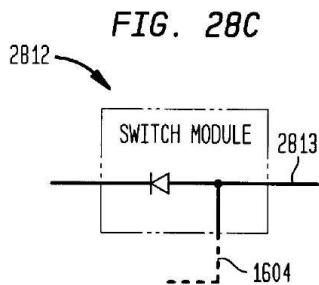
In 2020, the Middle District of Florida adopted the following construction for “switch”: “device with an input and output that can take two states, open and closed, as dictated by an independent control input.” (Ex. 15 at 14–31 (Order, *ParkerVision, Inc. v. Qualcomm Inc.*, 6:14-

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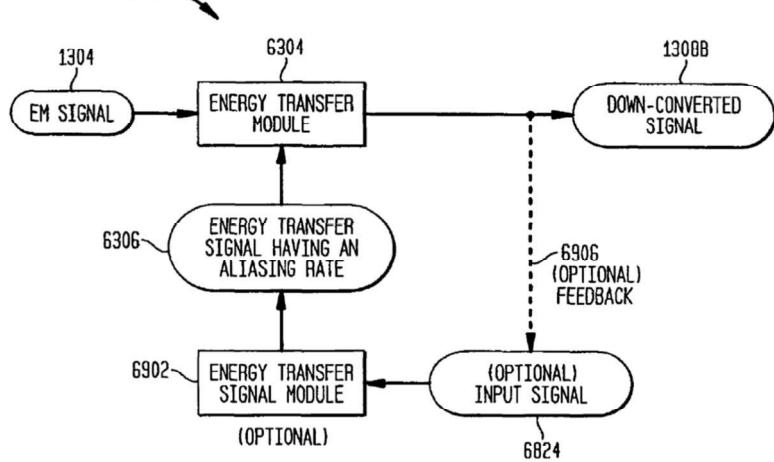
<sup>3</sup> The Federal Circuit is currently considering the PTAB’s construction of “storage module” in IPR2020-01265 (Appeal No. 22-1548), and its construction of “storage module” in IPR2021-00985 (Appeal No. 23-1417). Oral argument in Appeal No. 22-1548 occurred on August 9, 2023, almost three months ago. Oral argument in Appeal No. 23-1417 has not yet been set.

cv-00687, ECF 381 (M.D. Fla. Apr. 29, 2020).) In doing so, Judge Byron relied on several disclosures in the specification of a related patent (U.S. Patent No. 6,091,940) that ParkerVision said showed the recited “control input” was “independent from the input or the output of the switch.” Judge Byron thus rejected Qualcomm’s contentions that ParkerVision was trying to engraft language not required under a plain and ordinary meaning. (*Id.* at 31–32.) ParkerVision’s construction, however, does not line up with its specific arguments before Judge Byron. Rather than seeking a construction that would clarify that the “control input is a node independent of the input node and the output node of a switch,” ParkerVision proposes ambiguous language: “as dictated by an independent control input.” This proposed language is unhelpful because it begs the question: to what and/or in what way does the control input have to be independent? (Decl. of Dr. Hossein Hashemi ¶ 41 (“Hashemi Decl.”).)

This ambiguity is not a theoretical matter. The patents’ written descriptions contain examples where the control signal is coupled to the output, or is generated, in part or in whole by a feedback loop. For example, Figure 28C of the ’518 patent shows a control input (undersampling signal 1604) that is physically coupled to an output (2813). (’518 patent at 56:3–6.)



As another example, Figure 69 shows “(Optional Feedback)” 6906 that “uses down-converted Signal 1308B as feedback [] to control various characteristics of the energy transfer module 6304 to modify the down-converted signal 1308B.” (*Id.* at 107:56–59.)

**FIG. 69**

The patents thus describe that, at least for some embodiments, there can be and is dependence, whether physical or otherwise, between the control input and one or more of the input and the output. (Hashemi Decl. ¶ 43.)

This Court, Judge Gilliland, and Special Master Yi adopted the language “as dictated by an independent control input.” (Ex. 9 at 2; Ex. 10 at 32; Ex. 11 at 86–88.) Only Special Master Yi provided reasoning for adopting this language. In doing so, however, he did not expressly consider Figures 28C or 69 of the ’518 patent, and instead relied on disclosures in the ’518 patent that do not clearly show whether and how the control input is independent of the switch’s input and output: Figs. 73, 74, 76A-E, 82A-B, 95, and 66:24-26, 106:16-18, and 107:9-11.

ParkerVision’s attempt to include ambiguous language beyond the ordinary meaning of switch is contrary to the patents’ written descriptions and is unhelpful. It should be rejected. *See ActiveVideo Networks, Inc. v. Verizon Commc’ns, Inc.*, 694 F.3d 1312, 1326 (Fed. Cir. 2012) (rejecting plaintiff’s construction argued to be “confusing, unhelpful, add[ing] no clarity to the claim language itself, and [] erroneous” as “read[ing] limitations into the claims”).

C. “harmonic[s]”

Claim Term	MediaTek’s Proposed Construction	ParkerVision’s Proposed Construction
“harmonic” / “harmonics” ’518 patent, claim 1; ’706 patent, claims 8, 19	<p><b>Harmonic:</b> “A sinusoidal component of a periodic wave that has a frequency that is an integer multiple of the fundamental frequency of the periodic wave”</p> <p><b>Harmonics:</b> “Sinusoidal components of a periodic wave each of which have a frequency that is an integer multiple of the fundamental frequency of the periodic wave”</p>	<p><b>Harmonic:</b> “A sinusoidal component of a periodic wave that has a frequency that is an integer multiple of the fundamental frequency of the periodic waveform and including the fundamental frequency as the first harmonic”</p> <p><b>Harmonics:</b> “A frequency or tone that, when compared to its fundamental or reference frequency or tone, is an integer multiple of it and including the fundamental frequency as the first harmonic”</p>

The dispute concerning “harmonic(s)” has been raised by defendants in prior cases (Qualcomm, Intel, TCL, Hisense, and LG). The dispute boils down to whether the patents’ use of definitional language for “harmonic”—“an integer multiple of the fundamental frequency”—means that the fundamental frequency is not itself within the scope of the term “harmonic(s).” (Ex. 16 at 32 (Defs.’ Opening Cl. Constr. Br., *ParkerVision, Inc. v. Hisense Co., Ltd.*, No. 6:20-cv-00870-ADA (W.D. Tex.), ECF 34 (Aug. 23, 2021) (citing ’706 patent at 9:39–47; ’518 patent at 1:14–15, 1:25–27; and *Jack Guttman, Inc. v. Kopykake Enterprises, Inc.*, 302 F.3d 1352, 1360–61 (Fed. Cir. 2002))). Like the other defendants, MediaTek contends that “fundamental frequency” should not be included within the scope of “harmonic(s).” ParkerVision opposes. This Court, Judge Gilliland, and Special Master Yi have previously adopted constructions that include the “fundamental frequency as the first harmonic.” (Ex. 9 at 5; Ex. 10 at 30, Ex. 11 at

69–72, 104.) MediaTek rests upon the briefing of the other defendants as to this term. (Ex. 16 at 32; Ex. 17 at 13 (Def’s Opening Cl. Constr. Br., *ParkerVision, Inc. v. LG Electronics, Inc.*, No. 6:21-cv-00520-ADA (W.D. Tex.), ECF No. 33 (Feb. 24, 2022) (citations omitted)).)

#### D. “under-sampling”

Claim Term	MediaTek’s Proposed Construction	ParkerVision’s Proposed Construction
“under-sampling” ’706 patent, claims 8, 9, 19	“sampling at less than or equal to twice the frequency of the input signal”	“sampling at an aliasing rate” or “sampling at less than or equal to twice the frequency of the input signal”

The parties agree that “under-sampling” should be construed as “sampling at less than or equal to twice the frequency of the input signal,” but MediaTek disagrees, as did TCL, Hisense, and LG, that “sampling at an aliasing rate” is proper. “Sampling at an aliasing rate” was first adopted by this Court in the second *Intel* case, (Ex. 9 at 2), even though it was not adopted in the first *Intel* case, (Ex. 8 at 3). MediaTek contends this alternative construction is ambiguous and adds no additional insight into how one of skill in the art would understand “under-sampling.”

MediaTek further contends that this additional language would make the jury’s job at trial significantly more difficult given this ambiguity. ParkerVision’s alternative construction is unclear as to what signal the “aliasing rate” refers, even though the ’706 patent consistently discusses “aliasing” with respect to the “input signal.” (E.g., ’706 patent at 29:4-12.) Having unnecessary, dual constructions will create ambiguity and unnecessary extra work during expert discovery, will lead to jury confusion, and therefore MediaTek respectfully requests that the alternative construction be omitted. See, e.g., *ActiveVideo*, 694 F.3d at 1326.

**E. “A cable modem for down-converting an electromagnetic signal having complex modulations”**

<b>Claim Term</b>	<b>MediaTek’s Proposed Construction</b>	<b>ParkerVision’s Proposed Construction</b>
“A cable modem for down-converting an electromagnetic signal having complex modulations” ’835 patent, claim 1	Only the portion of the preamble reciting “an electromagnetic signal having complex modulations” is limiting.”	The preamble is limiting.

MediaTek’s proposed construction is that adopted by Judge Gilliland, and is consistent with the PTAB’s decision in IPR2021-00985. (Ex. 10 at 19–24; Ex. 12 at 21–25.)

A preamble is presumed to be non-limiting. *Am. Med. Sys., Inc. v. Biolitec, Inc.*, 618 F.3d 1354, 1358 (Fed. Cir. 2010). ParkerVision cannot overcome that presumption here. In *TCL*, Judge Gilliland correctly determined that ParkerVision had failed to overcome the presumption, in large part because claim 1 of the ’835 patent defines “a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention.” (Ex. 10 at 11, 23 (quoting *Catalina Mktg. Int’l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002) (citations omitted))). Judge Gilliland also (i) noted that ParkerVision “did not assert that this term was limiting in prior cases,” (ii) determined that ParkerVision’s “proposed construction incorrectly limits the claim scope to a particular embodiment,” and (iii) determined that ParkerVision’s prosecution revision of “system” to “cable modem” fell “well short of the ‘clear reliance on the preamble during prosecution to distinguish the claimed invention from the prior art’ necessary to [] find this term limiting.” (Ex. 10 at 23, 24 (quoting *Catalina*, 289 F.3d at 808).) ParkerVision also contended that dependent claim 16 and 17’s recitation of “cable modem” made claim 1’s preamble limiting, but Judge Gilliland rejected this argument: “Plaintiff does not cite any authority where a court found

that the recitation of a claim term in the body of a dependent claim require[ed] limiting that claim term in the preamble of the independent claim. At most, in such a situation only the preamble of the dependent claim would be so limited.” (Ex. 10 at 24 (emphasis in original).)

Additionally, because “an electromagnetic signal having complex modulations” provides the antecedent basis for “the electromagnetic signal” in claim 1, it is the only portion of claim 1’s preamble that is limiting. *See Catalina*, 289 F.3d at 808 (“Additionally, dependence on a particular disputed preamble phrase for antecedent basis may limit claim scope because it indicates a reliance on both the preamble and claim body to define the claimed invention.”).

## V. ADDITIONAL TERMS TO BE CONSTRUED

### A. “delaying said down-converted input samples”

Claim Term	MediaTek’s Proposed Construction	ParkerVision’s Proposed Construction
“delaying said down-converted input samples” ’706 patent, claim 8	“holding said down-converted samples”	Plain and ordinary meaning.

Claim 8 of the ’706 patent recites a “method of filtering and down-converting” where an “input signal” is “under-sampl[ed]” to “produce input samples of a down-converted image of said input signal.” The down-converted input samples are then “delay[ed],” and “a down-converted and filtered output signal” is “generat[ed]” from the combination of “delayed and down-converted input samples” and “delayed instances of the output signal.” What claim 8 and its dependent claims do not make clear is what constitutes “delaying” the down-converted input samples.

In the context of this claim, one of skill in the art would understand that the patent equates “delay” to “holding” down-converted input samples for a known amount of time, before

those samples proceed a subsequent circuit stage. (Hashemi Decl. ¶¶ 44.) This term does not refer to any form of inherent delay caused by transmission of a down-converted sample through a circuit or circuit element, contrary to what ParkerVision appears to suggest in its infringement contentions. MediaTek therefore requests that the “delaying said down-converted input samples” be construed as “holding said down-converted input samples.”

The ’706 patent consistently equates “delaying” a down-converted input sample with “holding” it for a known amount of time. (E.g., ’706 patent at Fig. 16 (step 1608), Fig. 18 (step 1808), Fig. 22 (step 2208), Fig. 24 (step 2412), 15:45 (“In step 1608, the input sample is held (that is, delayed.”), 16:24–25 (“In step 1608, the down-convert and delay module 1708 holds (delays) the input sample.”), 20:44–47 (“As evident from the low-pass filtering transfer function of EQ. 6, in order to perform the low-pass filtering operation, it is necessary to hold or delay the input signal VI by two time units.”), 20:54–56 (“In step 2208, at time t, the input sample VI<sub>t-2</sub> that has been held/delayed by two time units is released by the delay module 2310.”), 34:46–48 (“Accordingly, the sample and hold 4501 effectively holds or delays the sample of the input signal VI for one time period.”).) Likewise, the patent provides that “a delay module operates to delay samples/instances of a signal presented at its input by a known amount.” (E.g., *id.* at 32:57–29; *see also id.* at 32:30–43.)

Moreover, the patent never suggests that “delay” of a down-converted input sample is caused by mere transmission through a circuit. Rather, “delay” is always designed to impede or hold a signal for a known amount of time. (E.g., *id.* at 35:19–27 (“The analog delay line 3404 operates to delay an input signal by a known amount.”); *id.* at 38:3–7.)

“Where … ‘a patent ‘repeatedly and consistently’ characterizes a claim term in a particular way, it is proper to construe the claim term in accordance with that characterization.’”

*Wisconsin Alumni Rsch. Found. v. Apple Inc.*, 905 F.3d 1341, 1351 (Fed. Cir. 2018) (citations omitted) (affirming district court’s construction of “prediction” to cover only “dynamic predictions,” and not “static predictions”). *Wisconsin Alumni*’s rule applies here, and so MediaTek’s construction should be adopted.

**B. “in an integrated manner”**

Claim Term	MediaTek’s Proposed Construction	ParkerVision’s Proposed Construction
“in an integrated manner” ’706 patent, claim 19	“in a single, unified manner”	Plain and ordinary meaning.

The term “in an integrated matter” presents an issue of lexicography. The term should be construed in accordance with the express definition in the written description, while ParkerVision appears to be applying this term in a manner untethered from that definition in the specification. [REDACTED]

[REDACTED]

[REDACTED]

The ’706 patent defines “integrated” as “single, unified.” (’706 patent at 10:31–33 (“According to the present invention, frequency selectivity and frequency translation are performed as a single unified (i.e., integrated) operation.”); *id.* at 14:40–43 (“Specifically, according to the present invention, the UDF module 1102 performs the frequency selectivity operation and the frequency translation operation as a single, unified (integrated) operation.”); *id.* at 22:24–27 (“Accordingly, in step 2406, operations related to both the frequency translation operation 4410 and the frequency selectively operation 4410 and the frequency selectivity operation 4408 are performed in a single, unified (integrated) manner.”).) The patent’s use is definitional, for example, because the “[u]se of ‘i.e.’ signals an intent to define the word to which

it refers.” *Rembrandt Wireless Techs., LP v. Samsung Elecs. Co., Ltd.*, 853 F.3d 1370, 1376 (Fed. Cir. 2017) (quoting *Edwards v. Lifesciences LLC v. Cook Inc.*, 582 F.3d 1322, 1334 (Fed. Cir. 2009)). Further, the specification provides no indication that “i.e.” is not definitional. *See, e.g., Rembrandt*, 853 F.3d at 1376–1377 (citations omitted) (affirming district court’s construction of “modulation method [] of a different type” based on patentee’s use of “i.e.”); *Abbott Lab’ys v. Novopharm Ltd.*, 323 F.3d 1324, 1327, 1330 (Fed. Cir. 2003) (affirming district court’s construction because patentee defined “co-micronization” using “i.e.”).

MediaTek’s proposed construction should therefore be adopted.

## **VI. INDEFINITE TERMS**

Patent claims must “particularly point[] out and distinctly claim[]” the subject matter regarded as the invention. 35 U.S.C. § 112 (pre-AIA). A claim is invalid for indefiniteness if, when viewed in light of the specification and prosecution history, it fails to “inform those skilled in the art about the scope of the invention with reasonable certainty.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 910 (2014).

Claim terms can be indefinite for many reasons, including: (1) use of logically incoherent language, *e.g., Competitive Techs., Inc. v. Fujitsu Ltd.*, 185 F. App’x 958, 965-66 (Fed. Cir. 2006) (“Because the ‘address means’ limitation of claim 5 requires ISA structures, and the ‘sustain means’ limitation of that same claim excludes ISA structures, a person of ordinary skill in the art would be unable to determine the scope of the claims. They are internally inconsistent.”); (2) use of ambiguous or subjective language that “requires an artisan [to] make a separate infringement determination for every set of circumstances in which [an article or composition] may be used, and when such determinations are likely to result in differing outcomes,” *e.g., Haliburton Energy Servs., Inc. v. M-I LLC*, 514 F.3d 1244, 1255 (Fed. Cir. 2008), including where multiple, inconsistent ways exist to measure a claimed characteristic and

the patentee has provided no guidance about which method of measurement should be used, *Honeywell Int'l, Inc. v. Int'l Trade Comm'n*, 341 F.3d 1332, 1339, 1341 (Fed. Cir. 2003); and (3) use of terms of degree where the intrinsic evidence fails to provide “objective boundaries” on those terms to those of skill in the art, e.g., *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364 (Fed. Cir. 2014).

Each of the following claim terms is indefinite for one or more of the reasons above. The Court should therefore hold that the claims with these terms are indefinite.

**A. “wherein step (2) is at least partially integral with step (1)”**

Claim Term	MediaTek’s Proposed Construction	ParkerVision’s Proposed Construction
“wherein step (2) is at least partially integral with step (1)” ’706 patent, claim 17	Indefinite.	Plain and ordinary meaning.

The claim language “partially integral” is logically incoherent, therefore rendering the scope of claim 17 indefinite. One of skill in the art would have understood the term “integral” to mean “formed as a unit with another part.” (Ex. 18 at 628 (WEBSTER’S NINTH NEW COLLEGIATE DICT. (1991)).) As such, one of skill in the art would have understood claim 17 to cover where “step (2)” (“delaying said down-converted input samples”) is only “partially” “formed as a unit” with “step (1)” (“under-sampling an input signal to produce input samples of a down-converted image of said input”). But this makes no sense. Either something is formed as a “unit” or it is not. It is not partially formed as a unit.

The ’706 patent depicts multiple delay steps that are separate, while showing that in some instances one of the separate delay steps may be performed by the same module performing the down-conversion. See, e.g., ’706 patent at Figs. 16, 19, 26. But the patent never shows a delay

step being only partially “formed as a unit” with down-conversion step. This is not surprising as claim 17’s recitation of “partially integral” is logically incoherent. A person of ordinary skill in the art would thus have no certainty as to the scope of this claim term, rendering it indefinite. *See, e.g., MONKEYmedia, Inc. v. Apple, Inc.*, No. A-10-CA-319-SS, 2015 WL 4758489, at \*12-13 (W.D. Tex. Aug. 11, 2015) (determining claim terms were indefinite where “nonsensical” and “incoherent”).

**B. “pulse widths that are established to improve energy transfer from said input signal to said down-converted image”**

<b>Claim Term</b>	<b>MediaTek’s Proposed Construction</b>	<b>ParkerVision’s Proposed Construction</b>
<p>“pulse widths that are established to improve energy transfer from said input signal to said down-converted image”</p> <p>’706 patent, claim 18</p>	Indefinite.	Plain and ordinary meaning.

This term is indefinite because the ’706 patent does not provide guidance as to how one of skill in the art should determine whether an “improvement” in “energy transfer” has occurred, including by failing to provide any baseline against which to measure the supposed “improvement.” At most, the patent describes that use of “non-negligible apertures that tend away from zero” can “also” indirectly “improve energy transfer from the input signal 5304 to the down-converted output signal 5312” due to “substantial[]” impedance matching. (’706 patent at 32:9–18.)<sup>4</sup> But the patent demonstrates that “improv[ing] energy transfer” is not limited to “impedance matching,” *see, e.g.*, claims 18 and 92, and the patent’s disclosures provide no

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<sup>4</sup> It should be noted that this “guidance” relies on two other terms that are indefinite themselves: “tend away from zero” time in duration, and “substantial[] impedance match[ing].” *See infra* Sections VI.D and VI.I.

guidance about how to measure a supposed improvement other than from “impedance matching,” including the appropriate criteria for determining whether such an improvement has occurred. (Hashemi Decl. ¶¶ 45–46.) Additionally, a POSITA would have understood that an “improvement” in energy transfer that results from something other than “impedance matching” would be inconsistent with the principle of “impedance matching” itself, thus creating a likelihood of inconsistent determinations. (*See id.* ¶ 46.)

Accordingly, this term is indefinite, rendering claim 18 invalid. *See, e.g., Honeywell*, 341 F.3d at 1341 (claim indefinite where “testing results will necessarily fall within or outside the claim scope depending on the sample preparation method chosen”).

**C. “wherein said downconverting operation is performed so as to improve energy transfer from said input signal to a down-converted image”**

Claim Term	MediaTek’s Proposed Construction	ParkerVision’s Proposed Construction
“wherein said down-converting operation is performed so as to improve energy transfer from said input signal to a down-converted image” ’706 patent, claim 26	Indefinite.	Plain and ordinary meaning.

This term is indefinite for the same reasons set forth in Section VI.B, with respect to “pulse widths that are established to improve energy transfer from said input signal to said down-converted image.”

**D. “tend[s] away from zero time in duration”**

<b>Claim Term</b>	<b>MediaTek’s Proposed Construction</b>	<b>ParkerVision’s Proposed Construction</b>
“tend[s] away from zero time in duration” ’706 patent, claims 88, 91, 96; ’518 patent, claim 3	Indefinite.	Plain and ordinary meaning.

“Tend[s] away from zero time in duration” is indefinite because it is a subjective term of degree and the ’706 and ’518 patents fail to provide any “objective boundaries” for measuring whether a particular time duration falls within its scope. These patents generally provide that apertures that “tend toward zero time in duration” are used in “under-sampling” and “sample and hold” systems, and that apertures that “tend away from zero time in duration” are used in ParkerVision’s so-called “energy transfer (energy sampling)” invention. (E.g., ’706 patent at 32:4–18; ’518 patent at 62:26–29 (“The under-sampling systems utilize a sample and hold system controlled by an under-sampling signal. The under-sampling signal includes a train of pulses having negligible apertures that tend towards zero time in duration.”), 66:24–37 (“The energy transfer system 8202 receives an energy transfer signal 8210, which controls the switch module 8206. The energy transfer signal 8201 includes a train of pulses having non-negligible pulse-widths that tend away from zero time in duration.”).) The patents, however, provide no objective boundaries as to what constitutes an aperture that (i) “tends toward zero time in duration” or (ii) “tends away from zero time in duration.” (Hashemi Decl. ¶¶ 48–49.)

On top of this, the use of “tend[s]” suggests movement in a particular direction, not a fixed duration, but the patents never disclose or discuss control signals whose aperture-width

changes during the process of down-conversion. (Ex. 18 at 1214 (“to move, direct, or develop one’s course in a particular direction . . .”).) “Tend[s]” thus compounds the uncertainty.

To the extent that ParkerVision argues that the qualifiers “non-negligible” and “negligible” provide objective boundaries for these terms, that is incorrect for two reasons. First, both “non-negligible” apertures and “negligible” apertures allow for energy transfer, but “negligible apertures” are described as “minimizing” “the amount of energy transferred,” (’518 patent at 62:30–2), while “non-negligible” apertures “provide[] more time to transfer energy,” (*id.* at 65:62–63). Reliance on “negligible” and “non-negligible” therefore “just shifts the uncertainty” (to minimize / provide more time), and does not resolve it. *Semcon IP Inc. v. Huawei Device USA Inc.*, No. 2:16-cv-00437-JRG-RSP, 2017 WL 2972193, at \*25 (E.D. Tex. July 12, 2017) (finding “relatively short messages” indefinite).

Second, the ’518 patent demonstrates that “non-negligible apertures” are not coextensive with “pulse widths that tend away from zero time in duration”: “The optimized apertures 5606 are non-negligible **and** tend away from zero.” (E.g., ’518 patent at 83:2-3 (emphasis added).) As such, “non-negligible” cannot supply the necessary objective boundary. “[T]end(s) away from zero time in duration” is indefinite. *See Interval Licensing*, 766 F.3d at 1371 (“unobtrusive manner” indefinite).

**E. “to extend the time that said switch is closed for a purpose of increasing energy transferred from said input signal”**

<b>Claim Term</b>	<b>MediaTek’s Proposed Construction</b>	<b>ParkerVision’s Proposed Construction</b>
“to extend the time that said switch is closed for a purpose of increasing energy transferred from said input signal” ’706 patent, claims 88, 91, 96	Indefinite.	Plain and ordinary meaning.

This term is indefinite for reasons similar to those set forth in Section VI.B, with respect to “pulse widths that are established to improve energy transfer from said input signal to said down-converted image.” One of skill in the art would have understood that the patent’s disclosures do not limit an extension of “the time that said switch is closed for a purpose of increasing energy transferred from said input signal” to “impedance matching,” yet the patent provides no guidance about how one of skill should determine whether an “extension” other than for “impedance matching” is done for “a purpose of increasing energy transfer,” including by failing to provide a baseline against which a determination can be made that “the time that said switch is closed” has been extended. (Hashemi Decl. ¶ 50.) On top of this, the term incorporates an element of subjective intent (“for a purpose”) and the patent provides no guidance about how to assess that intent. (*Id.* ¶ 51.) Accordingly, this term is indefinite. *See, e.g., Interval Licensing*, 766 F.3d at 1371 (holding “unobtrusive manner” indefinite: “As we have explained, a term of degree fails to provide sufficient notice of its scope if it depends ‘on the unpredictable vagaries of any one person’s opinion.’”).

**F. “a relatively low input impedance path” / “a relatively low impedance load”**

<b>Claim Term</b>	<b>MediaTek’s Proposed Construction</b>	<b>ParkerVision’s Proposed Construction</b>
“a relatively low input impedance path” ’518 patent, claims 10, 13	Indefinite.	Plain and ordinary meaning.
“a relatively low impedance load” ’518 patent, claims 10, 13		

These terms are indefinite because the ’518 patent provides no objective boundaries about these “relative” terms of degree. At most, the ’518 patent defines “relatively low impedance load” as “one that is significant relative to the output drive impedance of the system for a given output frequency,” but the patent also defines “low impedance load”—a distinct term—exactly the same way. (’518 patent at 64:9–12, 66:55–61; Hashemi Decl. ¶ 53.) As a result, this language in the ’518 patent specification “just shifts the uncertainty, it does not resolve it.” *Semcon*, 2017 WL 2972193, at \*25 (“relatively short messages” indefinite where defined as “inordinately long”); *see also Signal IP v. Am. Honda Motor Co.*, No. LA CV14-02454 JAK, 2015 WL 5768344, at \*54–56 (C.D. Cal. Apr. 17, 2015) (“relatively low vehicle torque demand” indefinite).

Additionally, one of skill in the art would not have had an understanding of the term “impedance path.” “Impedance path” is not a term used in the art, and the ’518 patent provides no guidance about the meaning of this term outside of its mere recitation in the claims. (Hashemi Decl. ¶ 54.) Accordingly, one of skill in the art would not have understood the meaning of “relatively low input impedance path” with reasonable certainty.

**G. “a relatively efficient power transfer path”**

Claim Term	MediaTek’s Proposed Construction	ParkerVision’s Proposed Construction
“a relatively efficient power transfer path” ’518 patent, claims 11, 14	Indefinite.	Plain and ordinary meaning.

This term is indefinite for reasons similar to those set forth in Section VI.F. Outside of the claims, the ’518 patent never discusses “power transfer paths” or “relatively efficient power transfer paths,” and therefore the patent provides no objective boundaries for determining when a “power transfer path” is and is not “relatively efficient.” (Hashemi Decl. ¶¶ 55–56.)

**H. “wherein said frequency of said down-converted image is substantially equal to zero”**

Claim Term	MediaTek’s Proposed Construction	ParkerVision’s Proposed Construction
“wherein said frequency of said down-converted image is substantially equal to zero” ’706 patent, claim 84	Indefinite.	Plain and ordinary meaning.

“Substantially equal to zero” appears only in the ’706 patent’s claims; and the patent does not disclose or describe an example of a frequency of said down-converted image being “substantially equal to zero.” At most, the ’706 patent describes that directly down-converting a carrier frequency to a baseband frequency is known as “zero IF” (zero intermediate frequency). (’706 patent at 30:64–31:1, 31:14–21, 31:41–53; Hashemi Decl. ¶ 57.) But those passing references fail to give any guidance about what constitutes a down-converted image frequency that is and is not “substantially equal to zero.”

These indefiniteness issues here are similar to those in *Geodynamics, Inc. v.*

*Dynaenergetics US, Inc.* In that case, the district court ruled that the term “substantially equal to the total depth of penetration / (the tunnel)” was indefinite. No. 2:15-cv-1546-RSP, 2016 WL 6217181, at \*14–16 (E.D. Tex. Oct. 25, 2016). The district court did so because the patent’s specification (1) only disclosed clear tunnel depths that were “equal” (and not substantially equal) to the “depth of penetration,” (2) provided no guidance to one of skill in the art about how to determine whether a clear tunnel’s depth was “substantially equal” to the total depth of the tunnel, and (3) provided no examples of when “the clear tunnel depth is no longer ‘substantially equal’ to the total depth of the tunnel.” *Id.* at \*15–16 (citations omitted).

The same problems exist here. The ’706 patent does not provide any guidance to one of skill in the art about how to determine whether a frequency of a down-converted signal is “substantially equal to zero,” as opposed to zero itself, including by failing to provide any examples of when such a frequency is no longer “substantially equal to zero.” The patent thus fails to inform one of skill in the art about the scope of this claim term with reasonable certainty. See also, e.g., *Clear Imagining Rsch., LLC v. Samsung Elecs. Co., Ltd.*, No. 2:19-cv-00326-JRG, 2020 WL 6384731, at \*20–21 (E.D. Tex. Oct. 30, 2020) (“substantially blur free” indefinite since patent’s specification did “not provide guidance for determining whether a given level of blur is ‘substantially blur free’”); *Brazabra Corp. v. Ce Soir Lingerie Co., Inc.*, No. 1:18-cv-683-RP, 2019 WL 13136348, at \*4–7 (W.D. Tex. Aug. 15, 2019) (“substantial area” indefinite because patent’s specification provided “no objective standard by which to determine the scope of [the] term of degree,” including by failing to provide “any examples of when the adhesive fails to cover a ‘substantial area’” (citations omitted)).

**I. “a substantially impedance matched [input] path”**

Claim Term	MediaTek’s Proposed Construction	ParkerVision’s Proposed Construction
“a substantially impedance matched [input] path” ’518 patent, claims 12, 15	Indefinite.	Plain and ordinary meaning.

Claim 12 of the ’518 patent recites that “step (1) comprises receiving the carrier signal through a substantially impedance matched input path,” while claim 15 recites that step (5) comprises “providing the baseband signal to a load through a substantially impedance matched path.” These terms are indefinite for reasons similar to those set forth in Section VI.H .

While the ’518 patent discusses “impedance matching” in several places, it never mentions “substantial” impedance matching outside of the claims, including by providing no examples of “substantial” impedance matching. (Hashemi Decl. ¶ 58.) Instead, the patent teaches that impedance “mismatches” are a drawback to be avoided and that to maximize power, components “should be impedance matched”:

At higher frequencies, impedance mismatches between the various stages further reduce the strength of the EM signal 1104. In order to optimize power transferred through the receiver system 1102, each component should be impedance matched with adjacent components. Since no two components have the exact same impedance characteristics, even for components that were manufactured with high tolerances, impedance matching must often be individually fine tuned for each receiver system 1102. As a result, impedance matching in conventional receivers tends to be labor intensive and more art than science. Impedance matching requires a significant amount of added time and expense to both the design and manufacture of conventional receivers.

(E.g., ’518 patent at 24:6–20; *see also* Figs. 70, 76E, 77A, 77B, 7:31–33, 7:49–50, 104:49–105:61.) Additionally, several claims recite “impedance matching” a signal, further suggesting “impedance matching” and “substantial[] impedance match[ing]” have separate and distinct

meanings. *Agilent Techs., Inc. v. Affymetrix, Inc.*, 567 F.3d 1366, 1377–78 (Fed. Cir. 2020) (citations omitted) (“A ‘closed chamber … adapted to retain a quantity of fluid’ must mean something different than just a ‘chamber … adapted to retain a quantity of fluid.’ Otherwise, the word ‘closed’ becomes superfluous.”). The patent therefore fails to provide guidance to one of skill in art about how to determine when an “[input] path” is and is not “substantially impedance matched.” Accordingly, the patent fails to inform one of skill in the art about the scope of claims 12 and 15 with reasonable certainty. *See, e.g., Geodynamics*, 2016 WL 6217181, at \*15–16 (citations omitted) (ruling “substantially equal to the total depth of penetration / (the tunnel)” was indefinite).

## VII. CONCLUSION

For the reasons set forth above, MediaTek respectfully requests that the Court adopt MediaTek’s proposed constructions.

Dated: October 31, 2023

**PERKINS COIE LLP**

*/s/ Matthew C. Bernstein*

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**ATTORNEYS FOR DEFENDANTS AND  
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**CERTIFICATE OF AUTHORIZATION TO FILE UNDER SEAL**

I hereby certify that authorization for filing the foregoing pleading under seal has been conveyed pursuant to the Standing Order Regarding Filing Documents Under Seal in Patent Cases and Redacted Pleadings entered by this Court on March 7, 2022.

*/s/ Matthew C. Bernstein*

Matthew C. Bernstein

**CERTIFICATE OF SERVICE**

It is hereby certified that on this 31<sup>st</sup> day of October, 2023, a true and correct copy of the foregoing document, MediaTek's Opening Claim Construction Brief, was served by email on ParkerVision's counsel of record.

*/s/ Matthew C. Bernstein*

Matthew C. Bernstein